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BOSTON UNIVERSITY
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Thesis

STUDYING INDIVIDUAL DIFFERENCES OF PUPILS WITH TEACHERS FOR THE PURPOSE OF EXPLAINING SOME REASONS FOR FAILURES

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I A Special Study of the Pupils Three Years or More Over Age In A Boston School District, Revealed by Applying Age-Grade Standards

In 1919, Massachusetts enacted a law requiring the examination of all children three or more years retarded in school classes, and the establishment of special classes for their instruction.

Chapter 71, Section 46

> "Mentally Retarded Children
>
> The school committee of every town shall annually ascertain, under regulations prescribed by the department and the commissioner of mental diseases, the number of children three years or more retarded in mental development in attendance upon its public schools, or of school age and resident therein. At the beginning of each school year, the committee of every town where there are ten or more such children shall establish special classes for their instruction according to their mental attainments, under regulations prescribed by the department."

Boston prevents undue retardation by not allowing a pupil to remain in a grade more than two years but, in spite of this, many pupils, for various causes, become "three or more years retarded" and still do not go into special classes. This is not in willful violation of the law, but because no adequate plan for discovering and placing these retardants has been put into operation, and because parents, in some instances, refuse to allow their children to enter special classes even when they are three or more years mentally retarded.

In the year 1926-1927, a simple study was made in a certain Boston Elementary School District to discover some of the main differences among the pupils and to provide a little better for their physical and mental needs. Although this study was very limited in scope, it proved well worth-while for it made possible a re-organization at the opening of the following school year that practically eliminated from the regular grades all extreme cases of sub-normality and provided valuable data for use in the study of borderline or doubtful cases.

Since it was impossible to test all of the children of the district to determine their mental ages, they were roughly classified by their chronological ages, using the regulation "Admission, Discharge, Promotion" cards for the necessary data.

Since a pupil may enter the kindergarten in Boston as early as 4 years of age, and the first grade at 5 years, or 5½ years provided he has not attended the kindergarten,

> (Rules of the School Committee and Regulations of the Public Schools of the City of Boston - School Document No. 14, 1926.
>
> Chapter XII, Section 182.
> 2. Children four years of age and upward may be admitted in the order of application to those kindergartens which are most convenient for them to attend, and in which there are sufficient accommodations; provided, that principals of districts may, with the approval of the assistant superintendent in charge, decline to admit children to kindergartens when the number in attendance exceeds fifty. A record shall be kept of all applicants thus refused.
> 3. No child who shall be less than five and one-half years of age on September 1 of any year shall be admitted to the first or higher grade during that school year, except with the permission of the assistant superintendent in charge, or after the completion of a full year in a kindergarten; and no child under seven years of age shall be admitted to the first grade after November 1 in any school year, except with the approval of the assistant superintendent in charge.)

he may be considered as making normal progress if in the kindergarten and not yet six years old; if in the first grade and not yet seven years old; if in the second grade and not yet eight years old, and so on. By this standard, if a child began school in the kindergarten at the age of 4½ years and made normal progress he would be in grade one by 5½ years; in grade three by 7½, and in grade eight by 12½.

To be absolutely accurate and consistent, two age-grade distribution tables should be used in this study; one for the children

who attend kindergarten before entering grade one,and another for those who enter grade one directly from the home. Since relatively few enter the kindergarten exactly at four years, however, there is usually less than six months difference in the ages of the children who enter the first grade as a result of admission restrictions. Therefore, for the purposes of this study, the standard age for the kindergarten includes all pupilsfrom 4 years to 5 years and 5 months.

On this basis the standard mental age for the different grades in Boston would be as follows:

Standard Mental Age

Grade	Year Month		Year Month	
Kg.	4 - 0	to	5 - 5	or approx. 5 years
I	5-- 6	"	6 - 5	or approx. 6 years
II	6 - 6	"	7 - 5	or approx. 7 years
III	7 - 6	"	8 - 5	or approx. 8 years
IV	8 - 6	"	9 - 5	or approx. 9 years
V	9 - 6	"	10 - 5	or approx. 10 years
VI	10 - 6	"	11 - 5	or approx. 11 years
VII	11 - 6	"	12 - 5	or approx. 12 years
VIII	12 - 6	"	13 - 5	or approx. 13 years
IX	13 - 6	"	14 - 5	or approx. 14 years

Using this table as a basis, there was worked out a grade analysis blank for each grade that indicated the standard mental age for the grade, the over-ageness, and the under-ageness. When filled out, this showed at a glance the relative standing of each class, when the pupils were distributed according to their chronological ages. This blank was called "Grade Analysis - Form I". A sample blank made out for grade IX will be found on page 4.

GRADE ANALYSIS - Form I

__________________District

______________School Grade IX Room _______ Teacher __________

		Pupils
3 years under age	Approx. 11 years	_____
2 years under age	" 12 "	_____
1 year under age	" 13 "	_____
Standard Mental Age (13 yrs. 6 mo. to 14 yrs. 5 mo)		_____
1 year over age	Approx. 15 years	_____
2 years over age	" 16 years	_____
3 years over age	" 17 years	_____
	Total	_______

(Estimate age as of January 1.)

Directions to Teachers

1. Before "School", put in the name of your building.
2. Fill in your room number and your initials.
3. On "Form II" record data concerning the children who are two years or more under age, and of those who are two years or more over age. Also, record data concerning those pupils <u>within</u> the mental age limits set for your grade, who may be doing very inferior work or very superior work, or who may be extreme cases - truants, law-breakers, disciplinary cases, etc.
4. The physical records of all pupils will be made on a separate sheet by the school physician and the school nurse.

__________________Principal

For the purpose of securing data concerning children who were two years or more over age or two years or more under age, and also of those pupils within the mental age limits set for any grade who might be doing very superior or very inferior work, or who might be extreme cases - truants, law-breakers, disciplinary cases, etc., there was worked out a second form entitled "History - Form II" on which could be recorded somewhat in detail the history of each case. (See page 6.)

The gathering of data concerning these retarded pupils necessitated considerable study by the teachers of each pupil's home environment and social background, as well as a rather careful analysis of his life and work in school. In addition to information in regard to his age, years in school, number of years retarded, record of illnesses, etc., the teacher was asked to give her estimate of his conduct, effort, quality of work, general intelligence, reliability, and mental balance.

The results of these investigations were especially illuminating and beneficial to the teachers and materially modified their opinions with respect to the abilities and conduct of many of the pupils in their classes.

After Form I (p. 4) had been filled out by each teacher, grade totals were compiled and an age-grade distribution made of the 1726 pupils in the district. This table, called "Table I - Age-Grade Distribution," is found on page 8 . This table shows the grade totals for the District as they actually were, under "Foot Totals"; and as they should be, if all pupils were normal (under "Totals") in the right-hand column.

The figures in red opposite each grade indicate the number of

HISTORY - Form II

____________________District

Name School Grade Room

1. Age, Jan. 1, 1927 Years Months
2. Number of years in school
3. Number of years over age: Number of years under age:
4. Grade this child should normally be in:
5. Record of illnesses:
6. Nationality of father: Mother:
7. Occupation that supports family
8. Data regarding brothers and sisters. (Record on back of this sheet)
9. Status of child in home: Living with parents ( ); Living with relatives ( ); State Ward ( ); Give helpful information on back of this sheet.
10. Remarks: a. Summer School ( ); Repeated Grade? ( )

TEACHER'S ESTIMATE OF CHILD

		A	B	C	D	E
1. Conduct	(A - Very superior)					
2. Effort	(B - Superior)					
3. Regularity of Attendance	(C - Average)					
4. Punctuality of Attendance	(D - Inferior)					
5. Quality of work	(E - Very inferior)					
6. General Intelligence						
7. Reliability						
8. School Spirit						
9. Social Adaptability						
10. Mental Balance						

RECORD OF TESTS - INTELLIGENCE AND ACHIEVEMENT

1. Intelligence test ( )
2. Spelling ( )
3. Arithmetic ( )
4.
5.

February, 1927.

children of standard mental age in the different grades. Since only children who varied more than one year from the standard mental age for the grade were studied, the so-called normal children (those within one year of the standard age) are "boxed", to distinguish them from the extreme cases.

By studying the distribution in this table it will be seen that, exclusive of the kindergarten, the variation in the chronological ages of the pupils in every grade is from 4 to 8 years. The greatest variation is in grade VI where, at one extreme, there is a pupil of sixteen years, and at the other extreme, a pupil of nine years. Under normal conditions, the older pupil in this grade would be a second year student in high school, and the younger, still in grade four.

Table II (p. 8) is a summary of Table I. This table shows that only two pupils in the District were two or more years under age, whereas 196 pupils, or about 11.3%, were two or more years over age. Since 50 of these pupils were three or more years over age, they were selected for special study. Forty-five were examined individually by intelligence tests in order to determine their mental ability, after which they were given careful consideration in grade assignments based on social adjustment as well as mental calibre.

TABLE I

Age-Grade Distribution

Age as of January 1		Kg.	Gr. I	Gr. II	Gr. III	Gr. IV	Gr. V	Gr. VI	Gr. VII	Gr. VIII	Total
4 yr. 0 mo. - 5 yr. 5 mo.	Kg	129	27								156
5 yr. 6 " - 6 " 5 "	I	9	178	12							199
6 yr. 6 " - 7 " 5 "	II		42	121	10						173
7 yr. 6 " - 8 " 5 "	III		7	64	89	9	1				170
8 yr. 6 " - 9 " 5 "	IV		1	11	95	96	20	1			224
9 yr. 6 " - 10" 5 "	V				19	67	92	19			197
10 " 6 " - 11" 5 "	VI				4	19	55	73	12		163
11 " 6 " - 12" 5 "	VII						25	56	62	3	146
12 " 6 " - 13" 5 "	VIII					3	11	25	56	63	158
13 " 6 " - 14" 5 "	IX						3	8	25	69	105
14 " 6 " - 15" 5 "	X							2	5	15	22
15 " 6 " - 16" 5 "	XI							1	1	10	12
16 " 6 " - 17" 5 "	XII									1	1
Foot Totals		138	255	208	217	194	207	185	161	161	1726

TABLE II

Summary of Under-Ageness and Over-Ageness

2 years under age							1	1			2
1 year under age			27	12	10	9	20	19	12	3	112
STANDARD AGE		129	178	121	89	96	92	73	62	63	903
1 year over age		9	42	64	95	67	55	56	56	69	513
2 years over age			7	11	19	19	25	25	25	15	146
3 years over age			1		4	0	11	8	5	10	39
4 years over age						3	3	2	1	1	10
5 years over age								1			1

The examinations were made by Mr. Arthur Kallom, Department of Investigation and Measurement, and by Miss Katherine Coveney, Assistant to Miss Fitts, Director of Special Classes, both of the Public School System, Boston. A brief summary of the results of the examination of these pupils follows:

1 six year old boy was rated as a mental defective.

1 fourteen year old girl had such low mental power that exclusion from school was recommended. This girl had a M. A. of 7.2 and an almost negligible I. Q., and was referred to the Judge Baker Foundation for examination. She was found to be an institutional case. In her case it was also suggested that she be given a metabolism test "to see if thyroid treatment would be of any help.

1 sixteen and a half year old girl in grade VI with a mental age of 9.3 and an I. Q. of 57 was referred to our vocational counselor to see if something could be done in trade school.

1 sixteen year old girl (15.8) with a mental age of eleven and an I. Q. of 70 was referred to the vocational counselor for guidance. This girl is a City Ward and a behavior problem. She has since been taken from her foster home and placed in Chardon Street Home.

1 girl, fourteen years, four months old, with M. A. 9.1 and an I. Q. of 63 was adjudged incapable of going beyond grade VI, except in vocational work, and was referred to the vocational counselor for guidance.

4 boys of about eleven years were recommended for the special class group.

1 boy of ten years was adjudged a psychopathic case and a conference with the parents was recommended. This boy has since been placed in a special class.

1 boy of nearly 12, with a mental age of 7.10 and an I. Q. of 88 is an interesting case. He has a much over-sized head and a short, under-sized body and legs. His fingers are so short and stubby that he has difficulty in holding pen or pencil -- probably a case of Hydrocephalus. In spite of his physical handicap, he does good hand-work and head work. He probably will remain in grade for the present. Recently he was taken to the Eye and Ear Infirmary to have his eyes examined, as the school nurse found his vision somewhat defective.

Of the thirty-four others, twenty-six were recommended for special class instruction. Two were considered too young mentally to profit by any formal instruction. Two apparently had reached the limit of their learning ability and were considered institutional cases; three were considered so nearly normal that no need of change from the regular grade work was found; and one boy of 16 with a M. A. of 12 and an I. Q. of 76 was recommended for industrial work as he probably would not profit by further academic instruction.

Among these 45 children there were seven who seemed to be neither ordinary special class material nor institutional cases. They included some of the older pupils, a few of whom were behavior problems; two were mentally retarded but because of deformity could not easily go to the special class center where they ordinarily would have been placed; two were not up to grade, yet seemed normal, but apparently needed special attention to overcome poor study habits and to arouse interest and ambition in school work.

A conference was held with the Director of Special Classes of the City in regard to the best disposition of these cases and an "adjustment" class was recommended. The purpose of this class would be to get the pupils into a right working spirit and gradually to work them back into their normal places among their fellows.

As a result of the survey and of the examinations, one special class has been established in the district. When room can be found the "adjustment" class for some of the older misfits will be opened, provided favorable action is taken on our application. The data that were collected last year are being used in follow-up work during the present year and added information is being recorded in order to keep fully informed in regard to any possible misfits in the grades.

When the teachers were able to see the district as a whole in its relation to subnormality, they appreciated more the reasonableness of a survey or canvass to discover unusual cases.

The necessity of analyzing their own classes and of studying somewhat into the background of their children revealed much valuable information and in some instances modified their former viewpoints as to causes of delinquencies, failures, etc.

The differences in ages, chronological and mental, in children in the same class became a problem for study. The teachers saw that age alone is not to be depended upon as a basis for grading pupils.

Perhaps the most valuable result was getting the teachers to realize better the wide ranges of intelligence in every class and the impossibility of demanding the same output from every child.

The discovery of such wide chronological and mental age differences among the children in the district led to a more careful consideration of grade standards necessary to meet the varying needs of the pupils, and to a study of the pupils' progress from month to month, based on the teachers' estimates of the pupils' abilities, to see if an undue proportion of pupils were meeting with failure.

The study which follows deals entirely with recorded marks of pupils in the seventh and eighth grades, where the work was departmentalized and where each class had from five to eight different teachers during the week.

II A Study of Teachers' Estimates of Pupils' Abilities in a Seventh Grade Based on About 2,000 Teachers' Marks

A preliminary study of the seventh and eighth grade marks for the two months' period, September and October, seemed to indicate that there were wider variations in standards among the teachers than were warranted, even when taking into consideration the difference in subjects taught, the individual differences among the pupils, and the differences among the teachers themselves. Since these were the first reports, however, no detailed analysis was made of these marks, but those of the next period were carefully studied.

At that time the comparisons of marks (on a scale of A, B, C, D, E*) were so made that no teacher should know how her rating stood with reference to the others. At the same time the marked differences that appeared were shown graphically and by per cents. At this time, also, there was considerable discussion of marks in general and the danger of becoming a slave to the marking system. A number of paragraphs pertinent to the subject were read from books on education and the normal curve of distribution explained. The suggested distribution of A B C D and E's as contained in Boston Public School Document No. 3, 1925 follows herewith --

A 5% - 15%
B 25% - 35%
C 40% - 50%
D - 5% - 10%
E - 5% - 10%

These gradations were brought to the attention of the teachers again and a request made that careful consideration be given the next period's marks in order to approach a little nearer a uniform standard. The differences were

---

*Note - A - 90-100%, inclusive
B - 75- 89%, "
C - 60- 74%, "
D - 50- 59%, "
E - 0- 49%, "

D and E in this discussion are considered as failure marks.

discussed throughout in an impersonal way, the object being to show that too wide variations of standards existed, and that certain children were being favored perhaps by leniency, others by undue severity.

In order to see whether the study of the November-December marks would have any effect on the teachers' future estimates of pupils' rankings, a similar study of the January-February marks were made but with this difference: every teacher's marks were known and shown. The marks of the following subjects were considered:

English, including composition, dictation, literature, and grammar
Mathematics
Geography
History
Science
Penmanship
Drawing
Music
Spanish

By means of tables and graphs there were shown for each subject:

First: (See pp. 14-20)

1. The number of A's, B's, C's, D's, and E's given in each class.
2. The per cent of A's, B's, C's, D's, and E's for the grade.
3. The total number passing in each class.
4. The total number failing in each class.
5. The per cent failing in each class.
6. The per cent passing in the grade.
7. The per cent failing in the grade.

Second: (See pp.21-22)

1. A table showing the variations in the marks of five subjects, in each of the different classes.

- -

Note: By "class" is meant the number of pupils in a division.
By "Grade" is meant the total number of pupils in the several classes of the same kind. Thus the five classes of the 7th grade total 156 pupils.)

2. The greatest differences, expressed in per cents, in each class, and the percents of variation.

Third: (See page 23)

1. A table showing four subjects taught by each teacher, distributed as equitably as possible among the classes, with the number of D's and E's given by each teacher.

The following tables are concerned only with the marks of the five seventh grade classes. These are illustrative and will serve to explain the method and purpose of the analysis. The starred divisions are language classes and rank uniformly higher in general intelligence than the other divisions.

*7A - Language division, 32 pupils
7B - Commercial division, 33 pupils
7C - " " 32 "
*7D - Language " 30 "
7E - Commercial " 29 "
Total 156 "

Table of English Marks - Grade 7

January- February Marks 1928

Class	A's	B's	C's	D's	E's	Total	Passing	Failing
*7A	7	9	13	2	1	32	*7A - 29	3 - 9%
7B	4	10	11	6	2	33	7B - 25	8 - 24%
7C	7	4	10	4	7	32	7C - 21	11 - 33%
*7D	1	9	14	5	1	30	*7D - 24	6 - 20%
7E	0	1	8	17	3	29	7E - 9	20 - 68%
	19	33	56	34	14	156	108	48

Grade Totals

19 A's - 12+%	34 D's - 21+%
33 B's - 21 %	14 E's - 9 %
56 C's - 36 %	

Approximately 70% passing; 30% failing.

An examination of the table of English marks shows:

*7A has 3 failure marks - 9% of the class
7B has 8 failure marks - 24% of the class
7C has 11 failure marks - 33% of the class
*7D has 6 failure marks - 20% of the class
7E has 20 failure marks - 68% of the class

Immediately the three failure marks in 7A and the twenty failure marks in 7E draw the attention and demand explanation.

This table also shows 7A's and 9 B's in class 7A and
0 A's " 1 B in class 7E; a ratio of 16 to 1.

What is the trouble?

Table of Mathematics Marks - Grade 7

January-February Marks 1928

Class	A's	B's	C's	D's	E's	Total	Passing	Failing
*7A	1	17	12	2	0	32	30	2 - 6¼%
7B	4	5	15	3	6	33	24	9 - 27%
7C	2	6	13	6	5	32	21	11 - 33%
*7D	5	6	15	1	3	30	26	4 - 13%
7E	2	3	13	5	5	28	18	10 - 36%
	14	37	68	17	19	155	119	36

Grade Totals

14 A's - 9%
37 B's - 24%
68 C's - 44%
17 D's - 11%
19 E's - 12%

Approximately 77 passing; 23% failing

An examination of the Mathematics marks above shows but two failure marks in 7A and 11 failure marks in 7C, a difference of 9, or 27%. This would seem extreme but the other two commercial divisions have practically the same number of failures, showing the apparent superiority of the picked pupils over the commercial groups.

Table of Geography Marks - Grade 7

January-February Marks 1928

Class	A's	B's	C's	D's	E's	Total	Passing	Failing
*7A	0	2	12	9	9	32	14	18 - 56%
7B	3	14	9	6	1	33	26	7 - 21%
7C	3	9	15	3	2	32	27	5 - 15%
*7D	0	2	9	13	7	31	11	20 - 66%
7E	7	9	6	4	2	28	22	6 - 21%
	13	36	51	35	21	156	100	56

Grade Totals

13 A's - 8%
36 B's - 23%
51 C's - 33%
35 D's - 23%
21 E's - 13%

Approximately 64% passing; 36% failing

In the geography marks there are noticeable differences:

*7A, a language division, has 18 failures.

7B, a commercial division, has 7 failures.

7C, a commercial division, has 5 failures.

*7D, a language division, has 20 failures.

7E, a commercial division, has 6 failures.

The two classes of supposedly superior pupils, 7A and 7D, have a total of 38 failures, whereas the three commercial divisions have a total of only 18 failures. Evidently the standards are too high in 7A and 7D, or the class is not giving its best efforts to the work. The problem here is to find the cause of the tremendous variations.

Table of History Marks - Grade 7

January-February Marks 1928

Class	A's	B's	C's	D's	E's	Total	Passing	Failing
*7A	2	12	14	4	0	32	28	4 - 12½%
7B	5	9	12	6	1	33	26	7 - 21 %
7C	6	11	15	1	0	33	32	1 - 3 %
*7D	3	10	12	6	0	31	25	6 - 20 %
7E	5	6	10	6	1	28	21	7 - 25 %
	21	48	63	23	2	157	132	25

Grade Totals

21 A's - 13+%
48 B's - 31 %
63 C's - 40%
23 D's - 15-%
2 E's - 1-%

Approximately 84% passing; 16% failing

In history, 7C has only one failure contrasted with seven failures in both 7B and 7E. Compared with English and Geography, however, the total number of failures is low.

After the marks of the major subjects had been analyzed, certain of the minor subjects were studied, the marks for these subjects are especially interesting because, except in the case of penmanship, one teacher takes a minor subject with all seventh grades. For example, Miss Brownell teaches drawing in all five divisions; Miss Blume teaches all of the music; and Miss Ross teaches all of the science.

If the ideals and standards of these three teachers are anywhere near alike, the marks ought to be somewhat uniform. A study of the tables, however, shows variations almost as pronounced as in the major subjects.

Table of Drawing Marks - Grade 7

January-February Marks 1928

Class	A's	B's	C's	D's	E's	Total	Passing	Failing
*7A	4	17	8	3	0	32	29	3 - 11%
7B	5	16	13	0	0	34	34	0 0
7C	4	22	6	0	0	32	32	0 0
*7D	7	15	9	0	0	31	31	0 0
7E	3	14	11	0	0	28	28	0 0
	23	84	47	3	0	157	154	3
	107							

Grade Totals

23 A's - 15%
84B's - 53+%
47 C's - 30%
3 D's - 2%
0 E's - 0

Approximately 98% passing; 2% failing

Miss Brownell in drawing passes all but three of her 157 children. Miss Blume, the music teacher, gives passing grade to only 108 of these same children. (See pp.17-18) One teacher fails 3% of her class; the other teacher fails 31+%. One teacher gives 107 A's and B's; the other 54 A's and B's. (See pp.17-18)

Here are two subjects, drawing and music, cultural in nature, taught by two different teachers who have two different attitudes towards the marking system, and apprently two entirely different methods of approach. The two personalities are as different as the extremes in the classes they teach. Nevertheless each teacher is conscientious, honest, painstaking, capable, loyal. Will it be possible to reconcile the two attitudes of mind or viewpoints and find a common ground of agreement? Certainly there can be no justification for such tremendous variations as appear in these two subjects.

Table of Music Marks - Grade 7

January-February Marks 1928

Class	A's	B's	C's	D's	E's	Total	Passing	Failing
*7A	8	11	9	4	0	32	28	4 - 12½%
7B	1	8	7	10	7	33	16	17 - 51 %
7C	1	2	14	9	6	32	17	15 - 47 %
*7D	5	10	10	6	0	31	25	6 - 20 %
7E	2	6	14	7	0	29	22	7 - 24 %
	17	37	54	36	13	157	108	49
	54							

Grade Totals

17 A's - 11-%
37 B's - 23+%
54 C's - 34+%

36 D's - 22+%
13 E's - 9 %

Approximately 69-% passing; 31% failing

Table of Science Marks - Grade 7

January-February Marks 1928

Class	A's	B's	C's	D's	E's	Total	Passing	Failing
*7A	2	12	18	0	0	32	32	0
7B	2	7	25	0	0	34	34	0
7C	0	7	25	0	0	32	32	0
*7D	4	15	11	0	1a	31	30	1 - 3+%
7E	3	12	13	0	1	29	28	1 - 3+%
	11	53	92	0	2	158	156	2

Grade Totals

11 A's - 7%
53 B's - 34%
92 C's - 58%

0 D's - 0%
2 E's - 1½%

Approximately 98½% passing; 1½% failing

The teacher of science, Miss Ross, passes all but two of her pupils, evidently reasoning along the same lines as the teacher of drawing. (See p.17)

Table of Penmanship Marks - Grade 7

(In penmanship each teacher has her own class.)

January-February Marks 1928

Class	A's	B's	C's	D's	E's	Total	Passing	Failing
*7A	3	13	15	0	1	32	31	1 - 3%
7B	5	18	8	0	3	34	31	3 - 9%
7C	0	15	15	1	1	32	30	2 - 6%
*7D	0	5	12	7	7	31	17	14 - 45%
7E	5	8	11	3	2	29	24	5 - 16%
	13	59	61	11	14	158	133	25

Grade Totals

13 A's - 9%
59 B's - 37%
61 C's - 38%

11 D's - 7%
14 E's - 9+%

Approximately 84% passing; 16+% failing

It will be seen from the above table that but one child fails in 7A, whereas 14 children fail in 7D. More children fail in 7D than in the four other seventh grade classes together.

Although a wide variation occurs among the five classes, the greatest difference is between the two language divisions where there should be, logically, the closest approach to uniformity. Here again the actual variations are not among the children, but in the minds of their judges, the teachers.

Table of Spanish Marks - Grade 7

January-February Marks 1928

Class	A's	B's	C's	D's	E's	Total	Passing	Failing
*7A	6	4	11	8	3	32	21	11 - 33%
*7D	5	10	15	0	1	31	30	1 - 3%
	11	14	26	8	4	63	51	12

There are but two classes in seventh grade Spanish. The teacher fails 3% of her children in one class and 33% in the other class. She explains that the variation is due to the attitude of the pupils towards their work and not to lack of ability. What is the cause of the difference in attitude? Is it the influence of the home room teacher, of the other teachers who have these pupils, or of a few children who may have started wrong and have become antagonistic? Is it possibly lack of co-operation between the home room teacher and the language teacher? Is it a combination of circumstances? Whatever the cause, should there be eleven failures in one division and only one failure in the other division?

These are some of the problems a situation of this kind brings to the front for discussion and solution.

Following the analysis of the marks of the various subjects (pp.14 - 19.) a comparison was made of the marks in the four major subjects in each of the five divisions of the seventh grade and the range of per cent of failures in the major subjects.

Table of
Variations in Marks in Different Subjects and Per Cent Failing

Class		A's	B's	C's	D's	E's	Failing
*7A	English	7	9	13	1	1	9%
	Mathematics	1	17	12	2	0	6½%
	Geography	0	2	12	9	9	56 %
	History	2	12	14	4	0	12½%
	Science	2	12	18	0	0	0
7B	English	4	10	11	6	2	24%
	Mathematics	4	5	15	3	6	27%
	Geography	3	14	9	6	1	21%
	History	5	9	12	6	1	21%
	Science	2	7	25	0	0	0
7C	English	7	4	10	4	7	33%
	Mathematics	2	6	13	6	5	33%
	Geography	3	9	15	3	2	15%
	History	6	11	15	1	0	3%
	Science	0	7	25	0	1	3%
*7D	English	1	9	14	5	1	20%
	Mathematics	5	6	15	1	3	13%
	Geography	0	2	9	13	7	66%
	History	3	10	12	6	0	20%
	Science	4	15	11	0	1	3%
7E	English	0	1	8	17	3	68%
	Mathematics	2	3	13	5	5	36%
	Geography	7	9	6	4	2	28%
	History	5	6	10	6	1	28%
	Science	5	8	11	3	2	16%

This table shows the variation of marks in each division and the per cent failing in each subject.

7A, in Mathematics, for example, has only 2 failures (6½%) but has 18 failures in geography (56%).

7B varies only 6% in the number of failures in each of the four subjects, but the total number of pupils failing is larger than in 7A.

7C has a large number failing in English and Mathematics (33%) but fewer in Geography and History. There is 30% variation in this division.

*7D, another language division, shows great variation. In geography 20 pupils (66%) fail, while only 4 pupils (13%) fail in Mathematics. The variation here is 53%. The question naturally arises, "Why should there be these tremendous differences in 7A and 7D?"

7E shows 20 failing in English and 10 failing in Mathematics, with 6 and 7 failing in Geography and History respectively. 7E is an acknowledged poor division but should there be this wide variation, and should so many failures be necessary? Of course, there is this explanation that brightens up the situation. The mark of "D" means unsatisfactory work and not necessarily a complete failure, so that 7E instead of having 43 failure marks, actually has 11 failure marks and 32 unsatisfactory marks. This is not a good showing for teacher or pupil, but it is endurable and perhaps more justifiable.

The following table gives the range of per cent of failures in the major subjects of each division.

Range of Per Cent of Failures In Major Subjects

*7A	56%	vs.	6½%	Variation	of	49½%
7B	27%	"	21%	"	"	6%
7C	33%	"	3%	"	"	30%
*7D	66%	"	13%	"	"	53%
7E	68%	"	28%	"	"	40%

Greatest variations occur in the language divisions.

The interesting and disturbing point to be considered here is that the greatest variations are in the two language divisions where logically they should be least.

A study of the high grade marks, A's and B's, shows equally great variations. (See p. 21)

Since these extremes did not seem to be due to the subjects taught, nor to the pupils' abilities, as the variations occurred in

the same subjects in different classes, and also in different subjects in the same classes, a still further study was made of the marks; this time of the failures by teachers. Perhaps this study should have been made first, for the causes of the extreme variations were quickly revealed, but the previous analyses were valuable in that the tables had been made and studied and conclusions reached without personal bias.

The following table shows the failures by teachers in four major subjects distributed as equitably as possible among the teachers who taught them; and one minor subject, penmanship, taught in each case by the home room teacher. (See p. 19).

Table of Failures by Teachers

			D's	E's	Total		
Miss Bell							134
	7C	Geography	3	2	5	17	
	*7A	History	4	0	4		
	*7D	History	6	0	6		
	7C	Penmanship	1	1	2		
Miss Blume							
	7E	English	17	3	20	72	
	*7A	Geography	9	9	18		
	*7D	Geography	13	7	20		
	*7D	Penmanship	7	7	14		
Miss Howe							
	7C	English	4	7	11	25	
	*7D	Mathematics	1	3	4		
	7E	History	6	1	7		
	7E	Penmanship	0	3	3		
Miss Glen							
	*7A	English	2	1	3	20	
	*7D	English	5	1	6		
	7E	Geography	4	2	6		
	7B	Penmanship	3	2	5		

It will be seen from this table that of 134 failure marks in the five seventh grades, 72, or more than one-half (54-%) can be attributed to one teacher. By referring back to the table "Variations

in Marks in Different Subjects and Per Cent Failing" (p. 21)) it will be seen that the extreme variation in subjects and classes, except in one instance, is due to the hard marking of this one teacher. (See page 23).

This holds true in the minor subject, penmanship, as well as in the major subjects. (See p. 19 and p. 23)

A further proof of the extreme differences in standards or appreciations of abilities, of efforts, is seen in the subjects of music and drawing. Miss Blume, who has all of the 156 children in music, fails 49, while Miss Brownell, who has all of these children in drawing, fails but three. (See pp. 17-18.)

When the last analysis had been made, the teachers of the seventh and eighth grades were brought together to discuss the various tables which had been placed on the boards. Previous to this, all the teachers of the district had been shown the great differences among the children in the same grades, in chronological age and mental age, and inherent ability, as a result of the survey that had been made of the District with their help. (A Special Study of the Pupils Three Years or More Over Age In A Boston School District, Revealed by Applying Age-Grade Standards - See pp. 1-11). Knowing these differences in children, they should have been somewhat prepared for variations in their own ranks, but the analysis of their own marks was really a revelation.

Each one could see her own ratings. The facts were before her. The teacher who was responsible for the greatest number of failing marks attempted several explanations, but in every instance, the analysis showed that three or four other teachers had the same children and invariably marked more liberally. The trouble was not with the children. It was in the standards by which the children were judged.

During the study of the teachers' estimates of the abilities of the seventh and eighth grade pupils basedon their marks, these questions were asked repeatedly: "Whose marks are right?" "Don't you think a teacher ought to know what her own pupils can do?" "By what standard shall we judge pupils?" "Who is to decide what is passing grade?" "Shall we have the same standard for all pupils in a grade?"

For the purpose of illustrating how teachers vary in their opinions and of demonstrating the impossibility of ranking pupils with any great degree of accuracy, even when the class is composed of "picked" pupils, a study was made of a language division made up of 34 of the brightest pupils in an eighth grade, in the same district where the previous study was conducted. (Pp.12-24)

Although this was intended, primarily, to be a study of the individual differences among a group of selected pupils, incidentally it proved an equally good study of differences among teachers, and the results made it difficult to determine whether the variation in ranking was due to actual differences among the pupils or variations in the teachers' judgments.

The following intensive bit of work also demonstrated the reasons for the failure of many pupils, more clearly than either the study of the over-age pupils (pp. 1-11) or the comparison of pupils' marks (pp.12-24), for it graphically showed that the variations in standards and judgments of a few teachers, when dealing with a supposedly homogeneous group, were almost as great as the variations among the teachers dealing with all the pupils of a grade or of a district.

III A Study of the Individual Differences of Thirty-Four Pupils in an Eighth Grade Class, Based on the Terman Tests and the Estimates of Six Teachers

Six teachers in an eighth grade who had these thirty-four pupils in different subjects, were asked to rate the pupils, independently, in order of their ability. After this was done, the ranking of each teacher was compared with the ranking as determined by the intelligence tests. The results were shown in two ways:

(a) By a comparative table (p. 27)

(b) Graphically (pp. 29-34)

The table which follows gives nine different rankings of the thirty-four pupils in this eighth grade class. In the first column the rankings are based on the Intelligence Quotients in the Terman tests. In the second column the rankings are based on the estimates of the English teacher.

The third column shows the History teacher's rankings.

The fourth column shows the Spanish teacher's rankings.

The fifth column shows the Mathematics teacher's rankings.

The sixth column shows the Science teacher's rankings.

The seventh column shows the Geography teacher's rankings.

The eighth column is the average of columns two to seven and shows the rankings of the pupils as they would be if the six teachers' marks were averaged.

The ninth column shows the rankings based on the score in the Terman Intelligence Tests.

Table of Relative Rankings of Thirty-Four Pupils

	I Q	Eng.	Hist.	Span.	Math.	Science	Geog.	Aver.	Score
1. Burke, Robert	27	4	15	23	24	6	11	12	20
2. Coakley, John	28	34	30	33	29	24	31	33	30
3. Davis, Edward	33	9	34	3	28	20	12	16	33
4. Donohoe, John	5	10	19	28	32	33	16	25	16
5. Healy, John	24	20	14	7	11	16	8	9	13
6. Huss, Wesley	15	29	32	22	31	28	30	32	24
7. Keblinsky, Vincent	26	15	18	11	26	21	32	21	27
8. McDonough, Francis	22	6	17	18	25	22	19	17	17
9. Murphy, Francis	11	14	13	12	8	15	10	8	11
10. Nazzaro, Clorino	10	21	23	16	10	4	7	11	10
11. Shredda, Alfred	32	30	24	14	30	29	24	29	32
12. Smith, Forrest	25	33	33	32	34	30	34	34	28
13. Widing, Robert	--	22	10	9	20	14	14	14	--
14. Austin, Juliette	17	17	4	2	3	3	13	5	23
15. Campbell, Rita	14	31	16	31	17	31	23	28	26
16. Clapp, Leah	23	5	2	6	5	11	5	4	18
17. Connors, Gretchen	2	3	9	4	2	2	4	2	5
18. Creehan, Ruth	20	27	22	15	16	26	21	23	19
19. Feeney, Mary	29	32	25	26	15	27	22	27	22
20. Fijal, Helen	18	24	21	8	27	12	29	20	25
21. Fogg, Alta	6	1	1	1	1	1	1	1	6
22. Freeman, Helen	8	7	6	5	6	7	2	3	3
23. Green, Madeline	12	11	5	24	23	9	6	10	9
24. Harult, Margaret	21	23	3	25	7	5	3	7	12
25. Hoye, Agnes	13	18	29	19	21	32	33	31	2
26. Johnson, Florence	7	16	28	20	14	25	17	19	7
27. MacDonald, Mildred	16	28	20	29	18	17	18	24	8
28. Mason, Frances	3	13	7	34	33	23	15	22	15
29. McSheffry, Margaret	19	25	27	27	13	34	26	30	21
30. Pierce, Dorcas	30	26	8	21	22	10	25	18	31
31. Plett, Veronica	31	12	11	10	9	13	28	13	29
32. Shea, Helen	9	8	31	13	12	18	9	15	4
33. Sullivan, Beatrice	1	2	12	17	4	8	20	6	1
34. Wentworth, Edna	4	19	26	30	19	19	27	26	14
		A.E.A	C.M.S	E.M.K	E.H.D	A.F.R	M.G.B	Aver	

The first column, headed I. Q., gives the rank of each pupil based on the Intelligence Quotient in the Terman Tests.

The next six columns, headed English, History, Spanish, Mathematics, Science, and Geography, give the rank in each of the six subjects based on the teachers' estimates. At the foot of each column are the initials of the teacher who teaches the subject in that column.

The next column, headed "Average" gives the rank of the pupils based on the average mark of the six teachers.

The last column at the right gives the rank of the pupils based on the score in the Terman Intelligence Tests.

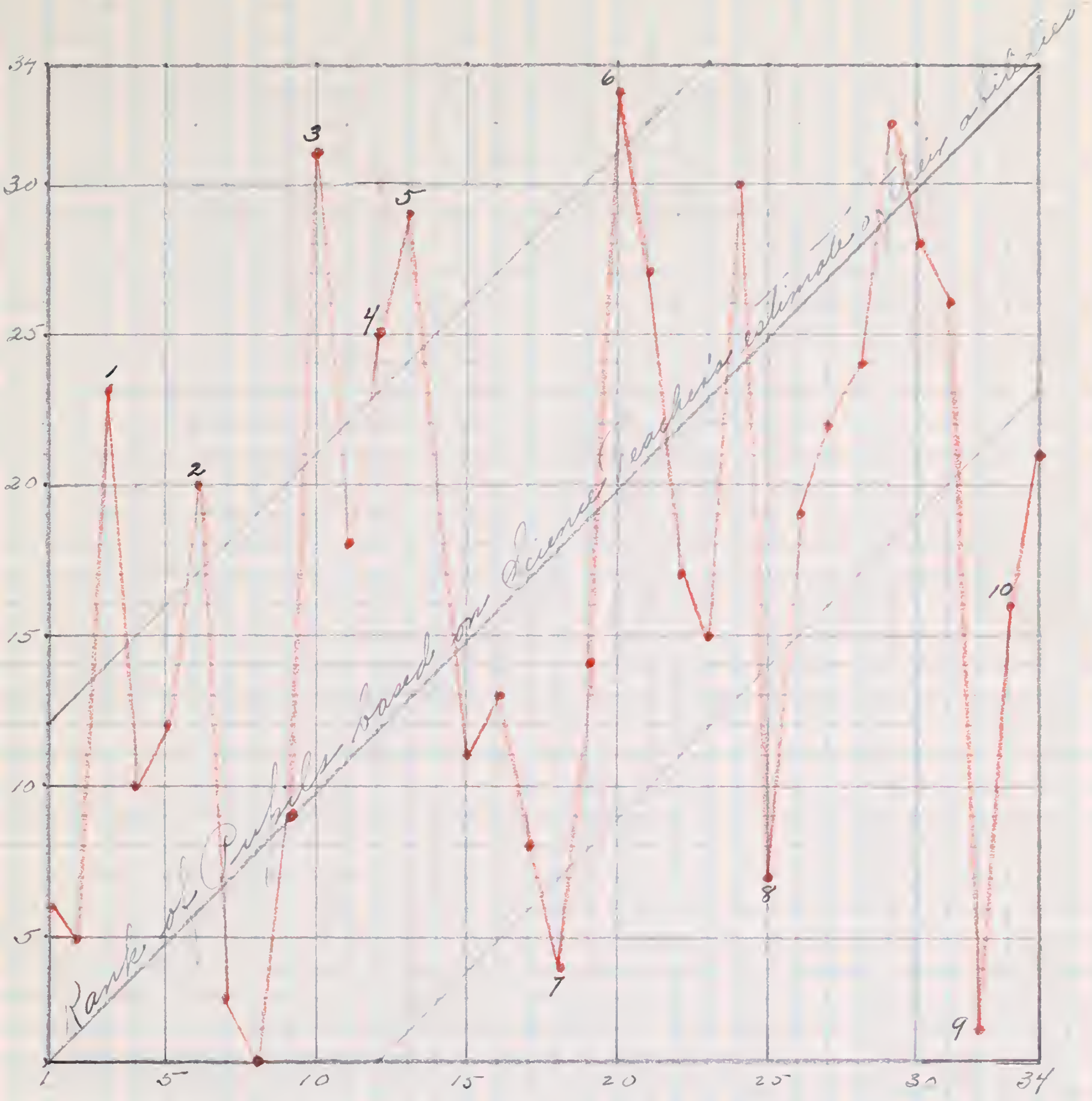
The graphs which follow are based on the rankings in the table on p. 27 and were used for the purpose of bringing vividly to the attention of each teacher the differences between the rank of the pupils when judged by her estimate of their abilities and rank they would have when judged by the Terman tests. The "score" was used as a basis of comparison between the Terman tests and the teachers' estimates instead of the I. Q. as the score seemed to be a standard that would approach somewhat nearer the teachers' estimates than the I. Q.

Since considerable difference would naturally be expected between the teachers' estimates and the Terman test findings, a variation in rank not greater than 12 was arbitrarily considered normal, and any variation in rank greater than 12 was considered extreme. These limits are indicated on the graphs by two lines parallel to the diagonal line which indicates the teachers' estimates of pupils' abilities.

The broken red lines represent the ranks of the pupils as determined by the scores in the Terman tests.

On the graphs were written the names of all extreme variants so that the teachers could see what pupils needed consideration and also to see if the same names recurred in the different graphs. The names of the extreme variants were then taken from the graphs and listed so as to show the total number of pupils with marked differences and the number of times each pupil varied extremely from the Terman score, and the subjects in which the variations occurred . This summary is shown in the "Table of Extreme Variations" on p. 36.

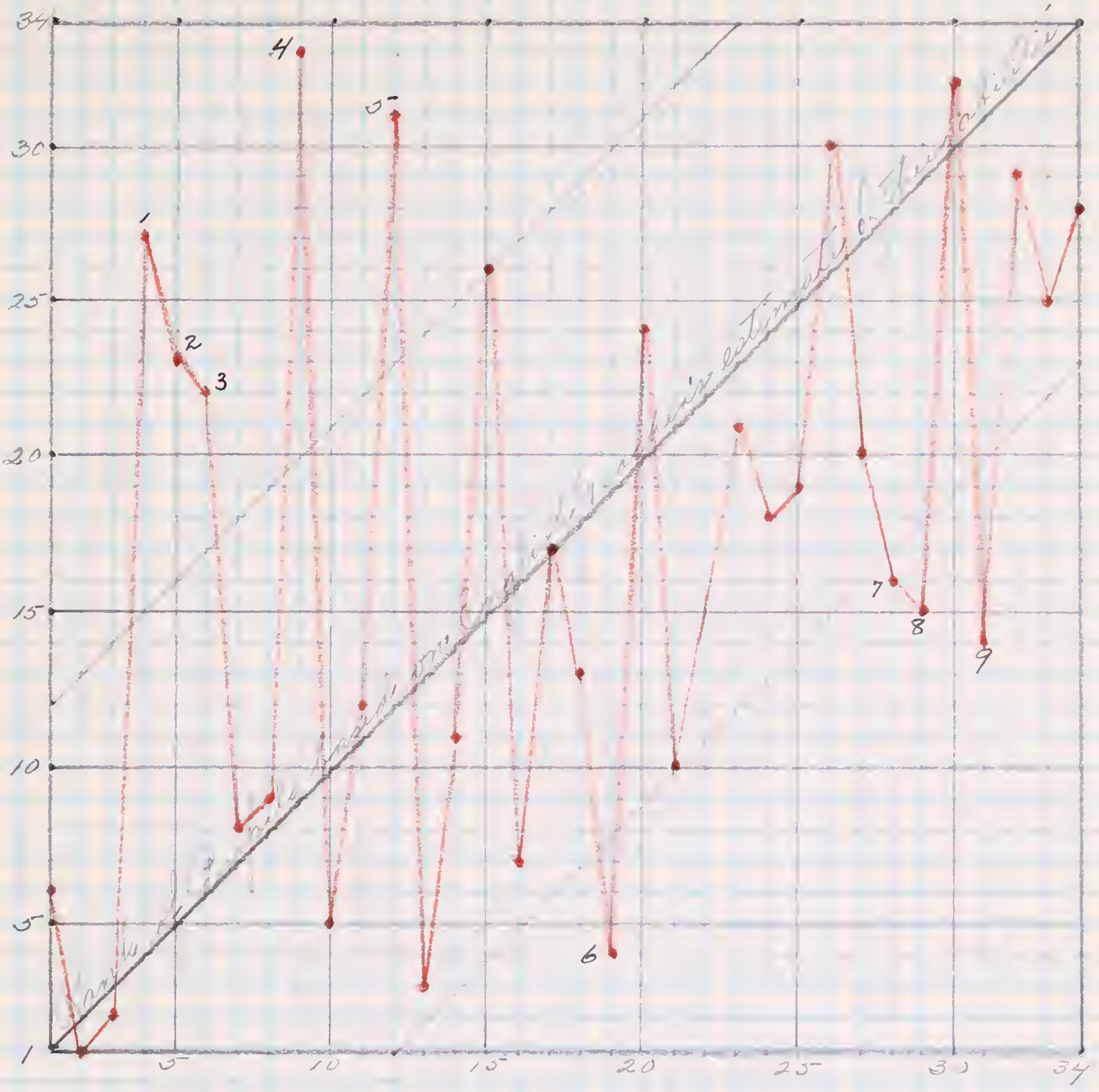
Class 8 B - Science



10 Extreme variants

1 Juliette Austin
2 Robert Burke
3 Dorcas Pierce
4 Helen Riegel
5 Veronica Little
6 Edward Davis
7 Helen Phipps
8 Florence Johnson
9 Agnes Hoye
10 John Donohoe

Class 8 L - English

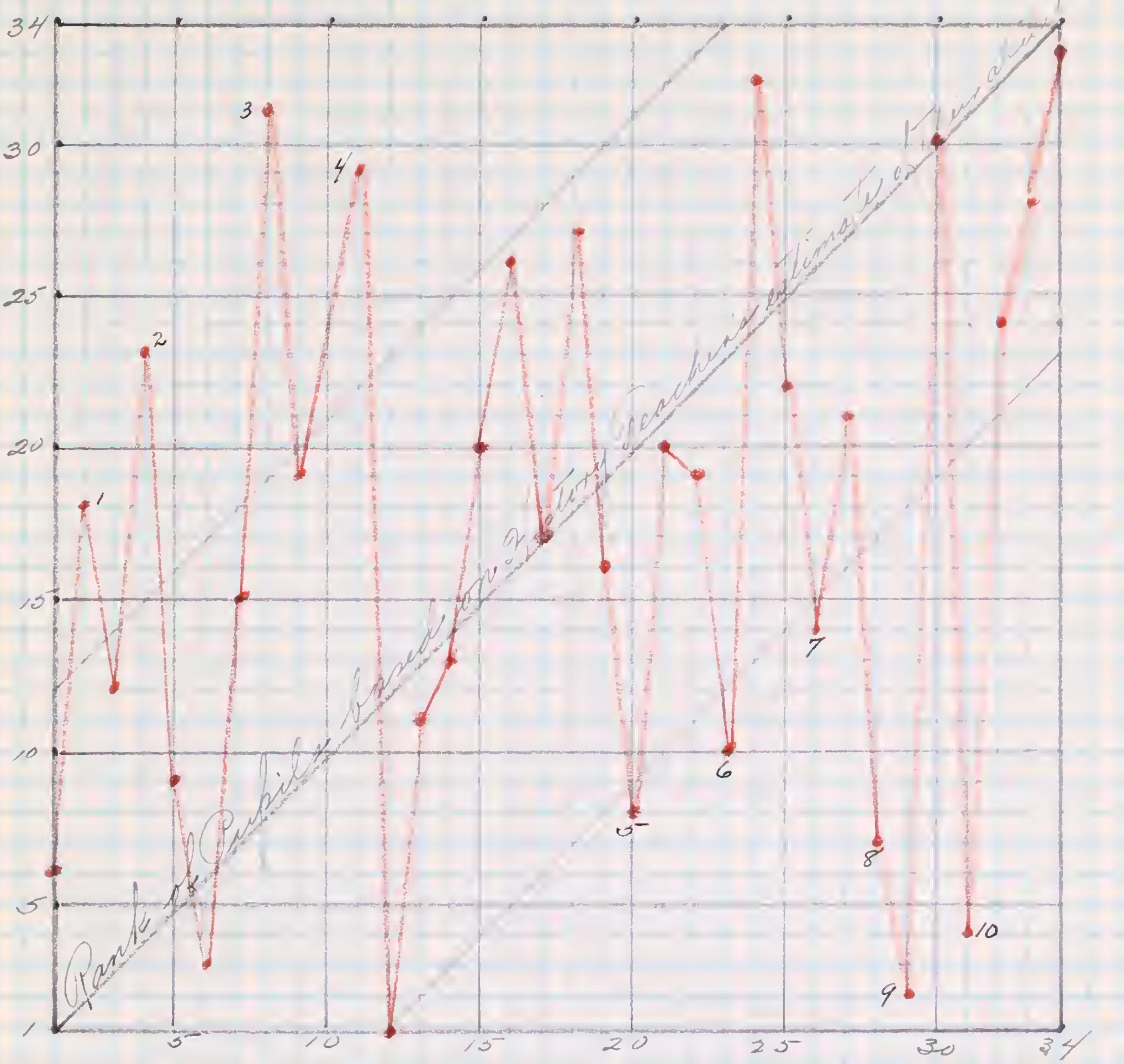


9 Extreme variants

1 Robert Burke
2 Leah Clark
3 Francis McLoug -
4 Edward [illegible]
5 [illegible]
6 Edna [illegible]
7 [illegible]
8 [illegible]
9 [illegible]

[illegible]

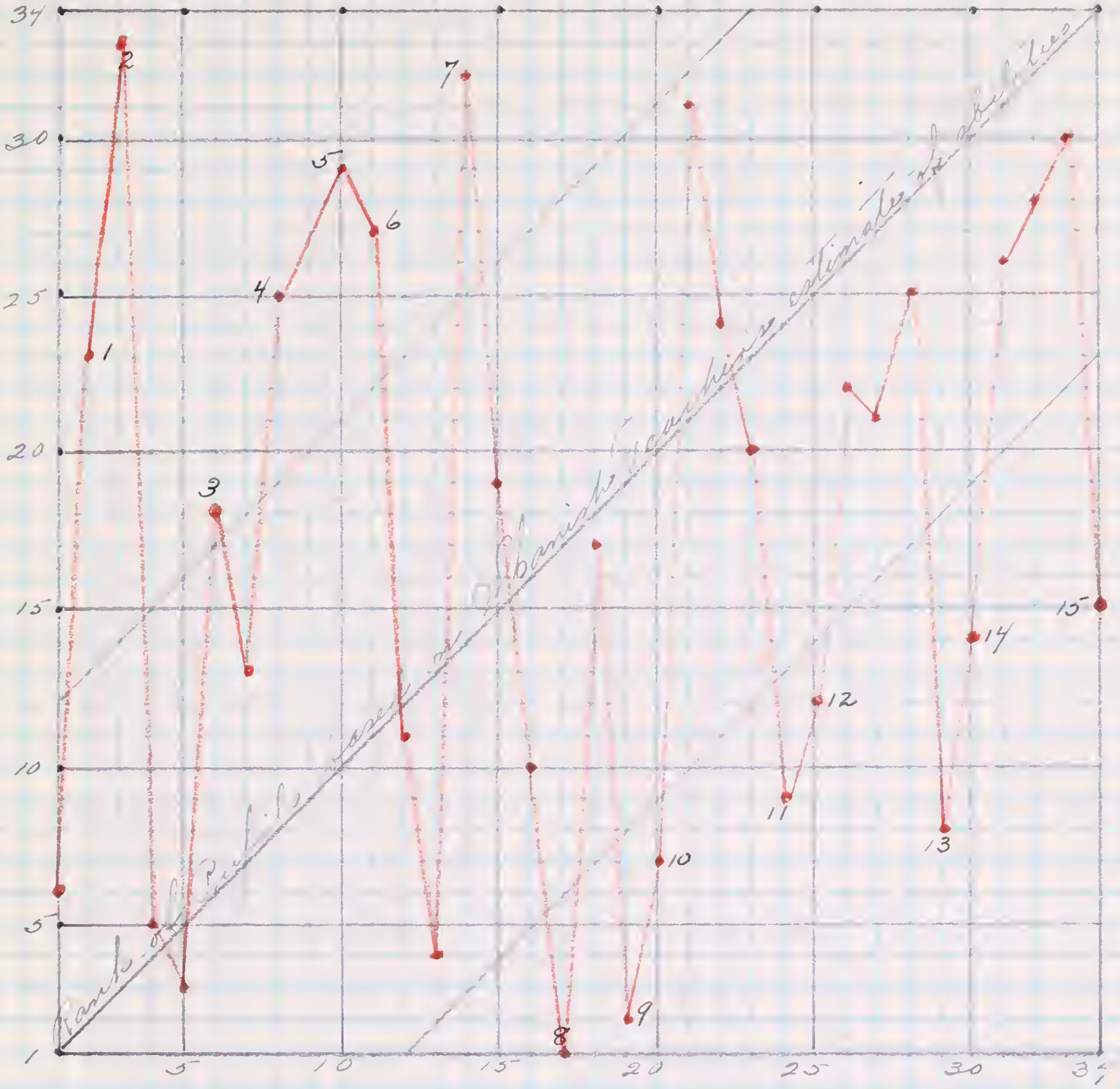
Class 8 D- History.



10 Extreme variants
1 Lea Clapp
2 Juliette Austin
3 Dorcas Pierce
4 Veronica Plett
5 Mildred McDonald
6 Clorindo Nazzaro
7 Edna Wentworth
8 Florence Johnson
9 Agnes Hoye
10 Helen [illegible]

Score

Class 8 D - Spanish

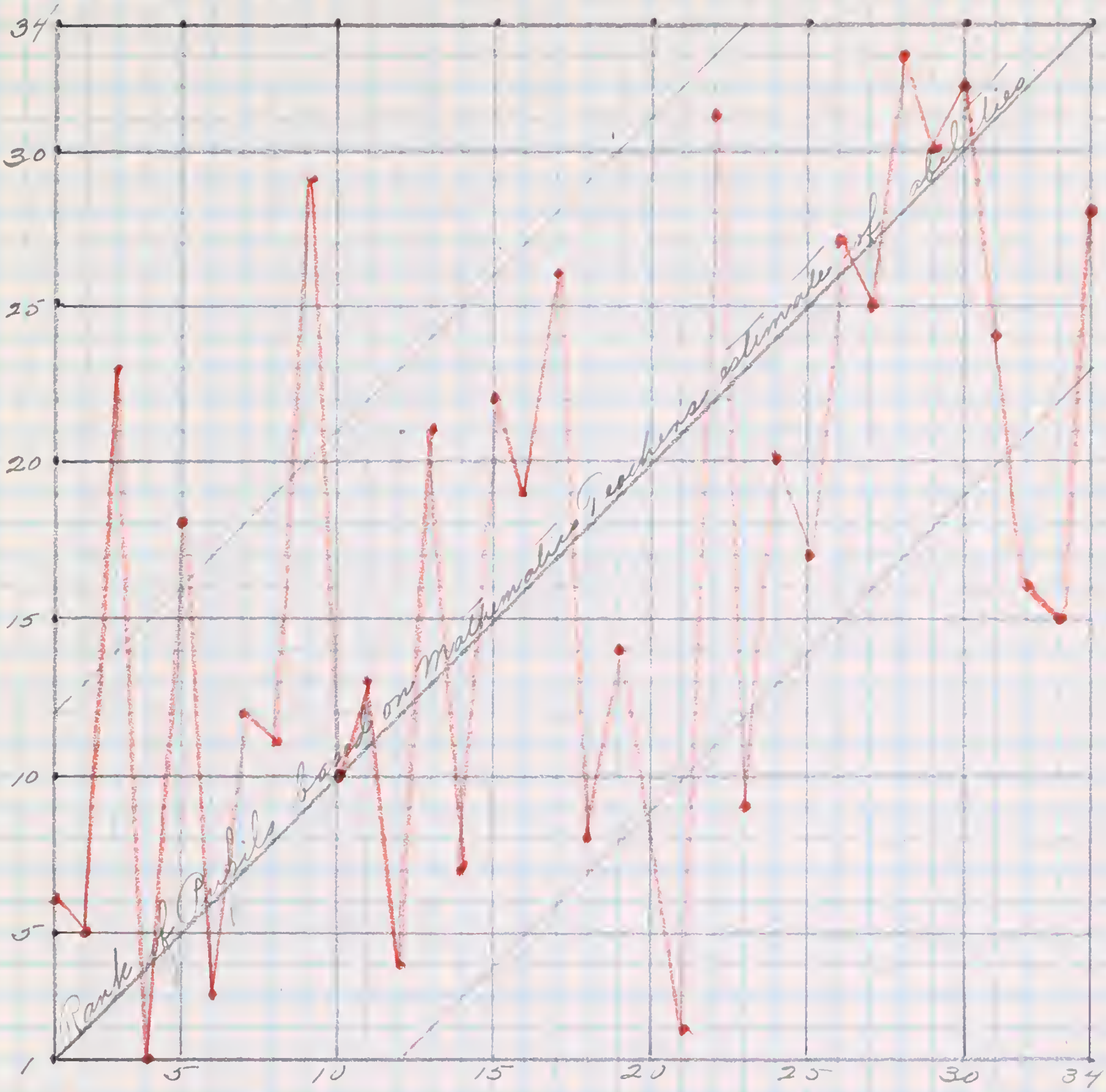


15 Extreme variants

1 Juliette Austin
2 Edward Davis
3 Leah Clark
4 Helen Fijal
5 Veronica Plett
6 Vincent Zeblinsky
7 Alfred Shreddar
8 Beatrice Sullivan
9 Agnes Hoye
10 Florence Johnson
1 Madeleine Green
12 Margaret Harult
3 Mildred McDonald
4 Edna Wentworth
15 Frances Mason

Score

Class 8 D - Mathematics

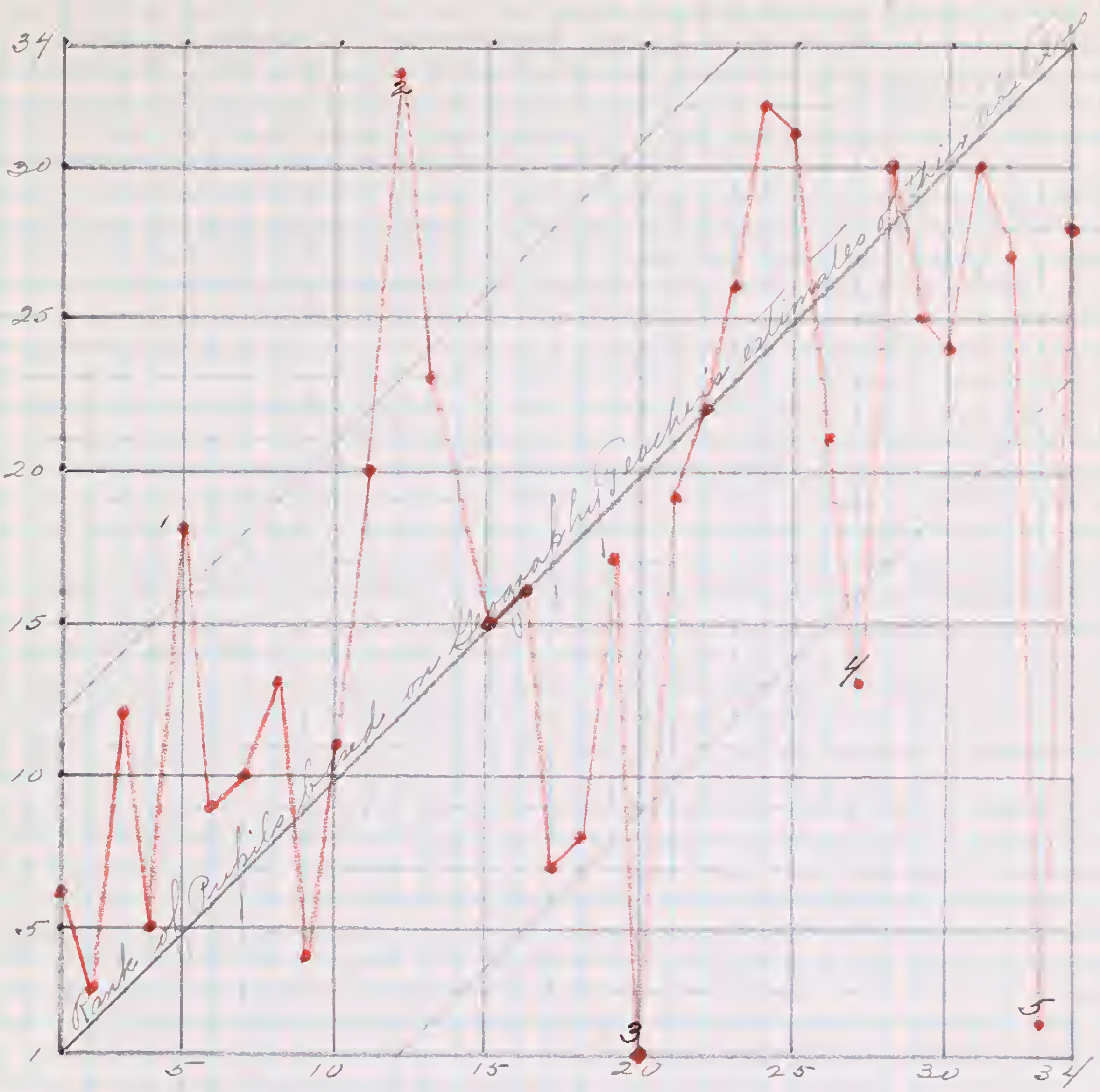


7 Extreme variants

1 Juliette Austin
2 Leah Clapp
3 Veronica Plett
4 Agnes Hoye
5 Madeline Green
6 John Donohoe
7 Frances Mason

Scores

Class 8 2 Geography



5 Extreme variants

1 Leah Clapp
2 Edward Davis
3 Beatrice Sullivan
4 Edna Wentworth
5 Agnes Hoye

By checking up the extreme variations it was found that 23 of the 34 pupils in the class, according to the teachers' estimates, differed markedly from the rank they should have held according to the intelligence tests. Of these 23 variants (see p. 36)

7 were extreme in the opinion of only one teacher
8 " " " " " " two teachers
2 " " " " " " three "
3 " " " " " " four "
3 " " " " " " five " } * See p. 38

A study of the last six recurrent variants * showed that the high rank given by the teachers to three girls was due to certain outstanding traits of character - faithfulness, honesty, good conduct, reliability, etc., that more than offset their lack of inherent ability. On the other hand, three other pupils, two girls and one boy, were rated low by the teachers for certain shortages: lack of application, evasion of work, superficiality, etc., although possessing considerable native ability.

The fact that only 6 out of 23 pupils varied materially in the minds of a majority of the teachers from the intelligence rating showed clearly differing standards of judgment, although, as one teacher remarked, some children were better in one subject than in another, and this fact might have been responsible for much of the difference in rating.

TABLE OF EXTREME VARIATIONS

based on teachers' estimates contrasted with Terman Group Test of Mental Ability - Form A

	Sci	Eng	Hist	Span	Math	Geog	Total
1. Agnes Hoye	*		*	*	*	*	5
2. Leah Clapp		*	*	*	*	*	5
3. Veronica Plett	*	*	*	*	*		5
4. Juliette Austin	*		*	*	*		4
5. Edward Davis	*	*		*		*	4
6. Edna Wentworth		*	*	*		*	4
7. Florence Johnson	*		*	*			3
8. Mildred McDonald		*	*	*			3
9. Robert Burke	*	*					2
10. Helen Shea	*		*				2
11. Dorcas Pierce	*		*				2
12. Helen Fijal	*			*			2
13. John Donohoe	*				*		2
14. Beatrice Sullivan				*		*	2
15. Madeline Green				*	*		2
16. Frances Mason				*	*		2
17. Francis McDonough		*					1
18. Wesley Huss		*					1
19. Rita Campbell		*					1
20. Clorino Nazzaro			*				1
21. Vincent Keblinsky				*			1
22. Alfred Shredda				*			1
23. Margaret Harult				*			1
	10	9	10	15	7	5	56

Ten pupils' rank varied extremely, in the Science teacher's estimation, from the rank given by the Terman Tests. (Column 1)
Nine pupils' rank varied extrmely, in the English teacher's estimation, from the rank given by the Terman Tests. (Column 2)
Ten pupils' rank varied extremely, in the History teacher's estimation, from the rank given by the Terman Tests. (Column 3)
Fifteen pupils' rank varied extremely, in the Spanish teacher's estimation, from the rank given by the Terman Tests. (Column 4)
Seven pupils' rank varied extremely, in the Mathematics teachers' estimation, from the rank given by the Terman Tests. (Column 5)
Five pupil's rank varied extremely, in the Geography teacher's estimation, from the rank given by the Terman Tests. (Column 6)

The stars (*) opposite the names of these 23 pupils indicate the number of instances in which their teachers' rankings vary markedly from the rankings they should have according to their intelligence rating, -- and the subjects in which these variations occur. Thus, Agnes Hoye's rating by her Science, History, Spanish, Mathematics and Geography teachers varies extremely from the rating she receives as a result of the Terman Tests.

The table headed "Amount of Variation Between Ranks Given Six Pupils by Teachers and Ranks Based on Score in Terman Tests" (p. 38) shows how much the teachers' estimates differed from the Terman Score in these six extreme cases.

At the left are the names of the six pupils involved. The column headed "Terman Test Rank" indicates the rank of each pupil based on the "score" or the "I. Q." in the Terman Tests. The teacher of English used the "I.Q." as a basis for comparison instead of the "score" so that in three instances both the I. Q. and score appear in the table.

Except in the case of Edna Wentworth the difference between the two is negligible, however, and does not materially affect the results.

The column headed "Teachers' Rank" indicates the ranks the different teachers gave to the six pupils in the subjects named.

The column headed "Variations" shows the difference between the rank given each pupil by the teacher and the rank given the pupil by the Terman tests.

Table of Amount of Variation Between Rank Given Six Pupils by Teachers
And Rank Based on Score in Terman Tests.

	Terman Test Rank	Teachers' Rank	Variations
Agnes Hoye	Score 2	History - 29	27
	Score 2	Spanish - 19	17
	" 2	Math. - 21	19
	" 2	Science - 32	30
	" 2	Geog. - 33	31
Leah Clapp	I.Q. 23	English - 5	18
	Score 18	History - 2	16
	" 18	Spanish - 6	12
	" 18	Math. - 5	13
	" 18	Geography 5	13
Veronica Plett	I.Q. 31	English - 12	19
	Score 29	History - 11	18
	" 29	Spanish - 10	19
	" 29	Math. - 9	20
	" 29	Science - 13	16
Juliette Austin	Score 23	History - 4	19
	" 23	Spanish - 2	21
	" 23	Math. - 3	20
	" 23	Science - 3	20
Edward Davis	I.Q. 33	English - 9	24
	Score 33	Spanish - 3	30
	" 33	Geog. - 12	21
	" 33	Science - 20	13
Edna Wentworth	I.Q. 4	English - 19	15
	Score 14	History - 26	12
	" 14	Spanish - 30	16
	" 14	Geography 27	13

An examination of the above table will show that except in the case of Edward Davis, the teachers' estimates of these six extreme variants are not greatly different. Juliette Austin, ranked as 23rd in the class by the Terman score, is put by four teachers very near the head of her class; Leah Clapp also rates high in the teachers' estimation, but is below the middle of the class according to the Terman Tests.

On the other hand, Agnes Hoye, judged next to the highest in the class by the Terman Tests, is ranked by five teachers in the lower half of the class.

The result of this simple analysis of a single, homogeneous group showed how difficult it was for teachers to agree upon the relative standing of pupils in a class when comparing their rankings with rankings based on an intelligence test.

The next step in this study was to demonstrate that the teachers differed as much among themselves in their estimates of pupils' ranks as their estimates differed from the Intelligence Ratings, and so a comparative study of the teachers' rankings was made, without reference to the Terman Tests.

In order to test how closely the teachers' judgments agreed in the ranking of this class, the average of the six teachers' estimates was taken as a standard and each teacher's own ranking compared with this average. (See "Table of Relative Rankings of Thirty-Four Pupils" p. 27)

These differences are shown in the following graphs in which each teacher's estimates of the relative rank of her pupils is compared with the rank each pupil would have if the marks of the six teachers were averaged. (See pp. 42-47) The diagonal line represents the average of the six teachers' estimates of the pupils' abilities. The two lines parallel to the diagonal indicate the limits of normal differences. Any variation in rank greater than 12 is considered "extreme." The broken red line in the six charts represents each teacher's variation in ranking from the average.

Only the extreme cases are considered in this study.

The differences between each teacher's ranking and the average of the six teachers were found to be more marked in this comparison

than in the one between the teachers' estimates and the intelligence tests, for here, although only 18 children out of the 34 were found extreme variants by one or more teachers, there was not so much agreement in the selection of the variants. (See "Table of Relative Rankings of Thirty-four Pupils", p. 27 , and "Table of Extreme Variations Based on The Average of Six Teachers' Estimates of Pupils' Ranks Compared With Each Teacher's Individual Estimates of Pupils' Ranks," p. 41)

5 pupils were extreme variants in the opinion of the English teacher, but 3 of these were considered extreme by the English teacher only.

5 different pupils were extreme variants in the opinion of the History teacher, but 3 of these were considered extreme by the History teacher only.

7 different pupils were extreme variants in the opinion of the Spanish teacher, but 4 of these were considered extreme by the Spanish teacher only.

5 different pupils were extreme variants in the opinion of the Mathematics teacher, but 3 of these were considered extreme by the Mathematics teacher only.

2 different pupils were extreme variants in the opinion of the Geography teacher only.

4 different pupils were extreme variants in the opinion of two teachers only.

1 pupil was an extreme variant in the opinion of three teachers.

The Science teacher was the only teacher in whose opinion no pupil varied markedly from normal. (See Graph, p. 42)

With the exception of two pupils, the 18 variants in the second comparison were found duplicated in the first comparison, showing that the intelligence tests were as dependable in indicating certain abilities or shortages as the teachers' estimates.

It was understood by the teachers that the use of one set of intelligence tests for a basis of comparison was insufficient for accurate measurement purposes and that no definite conclusions should be drawn as a result of the study. Certain inferences could be drawn,

however, and the basis laid for further and more detailed investigation of individual differences.

Table of Extreme Variations Based on the Average of Six Teachers' Estimates of Pupil's Ranks Compared with Each Teacher's Individual Estimate of the Pupil's Ranks.

	Sci.	Eng.	Hist.	Span.	Math.	Geog.	Total
1. Edward Davis			*	*	*		3
2. Madeleine Green				*	*		2
3. Margaret Harult		*		*			2
4. Agnes Hoye		*		*			2
5. Frances Mason			*	*			2
6. John Donohoe		*					1
7. Francis McDonough		*					1
8. Juliette Austin		*					1
9. Rita Campbell			*				1
10. Clorindo Nazzaro			*				1
11. Helen Shea			*				1
12. Helen Fijal				*			1
13. Alfred Shredda				*			1
14. Mary Feeney					*		1
15. Margaret McSheffry					*		1
16. Robert Burke					*		1
17. Beatrice Sullivan						*	1
18. Veronica Plett						*	1
	0	5	5	7	5	2	24

The stars (*) opposite the names of the 18 pupils in this table indicate the number of instances in which their teachers' rankings vary markedly from the rankings they would have if the ratings of the six teachers were averaged. The stars (*) also indicate the subjects in which extreme variation from the average occurs.

According to the Science Teacher's ratings, no pupil varied materially from the average rating of the six teachers. (Column 1, Sci.; also see graph, p. 42)

5 pupils' ranks varied extremely from the average, compared with the English teacher's ratings. (Column 2, Eng.; also see Graph, p. 43)

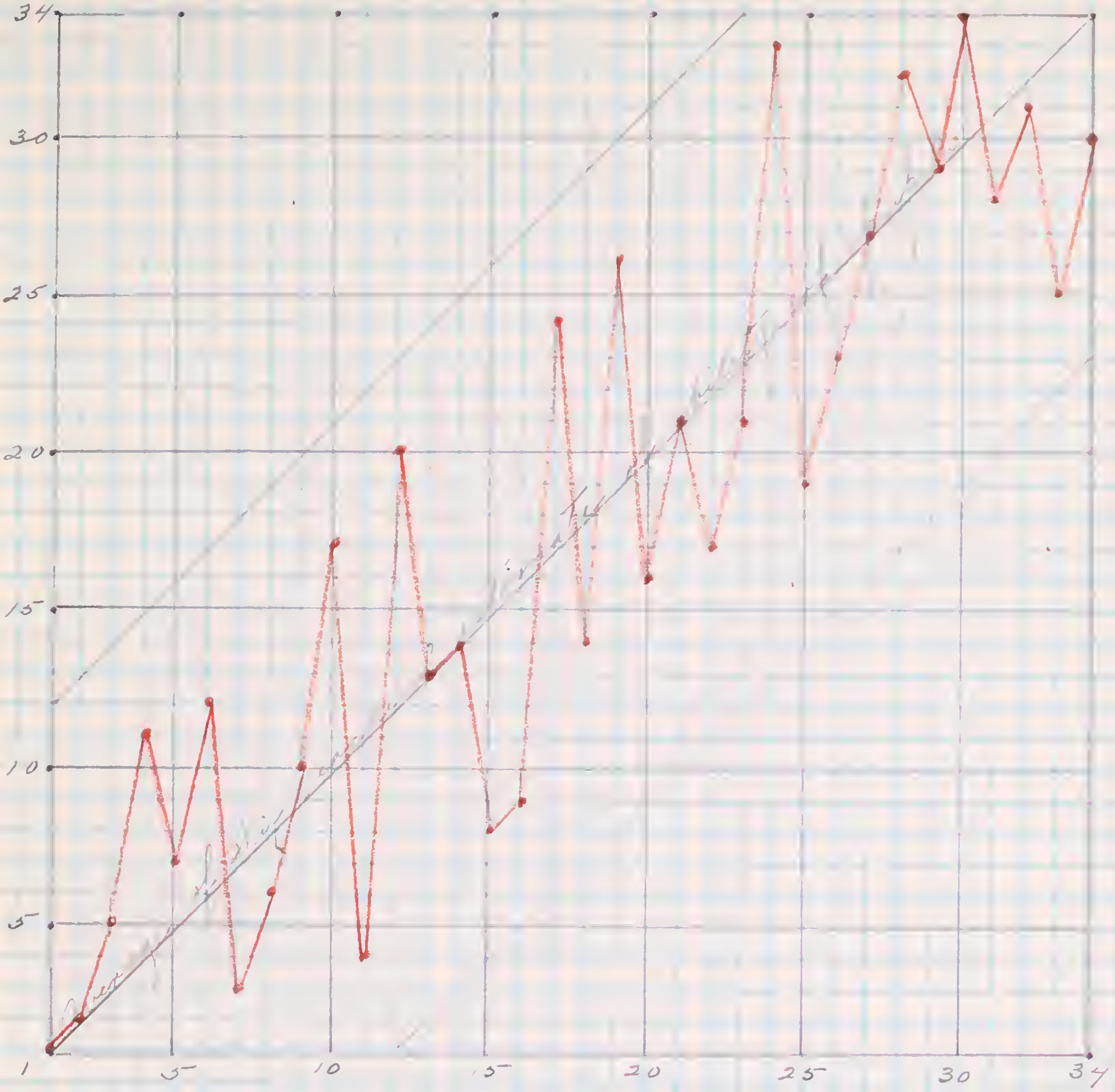
5 pupils' ranks varied extremely from the average, compared with the History teacher's ratings. (Column 3, Hist.; also see Graph, p. 44)

7 pupils' ranks varied extremely from the average, compared with the Spanish teacher's ratings. (Column 4, Span.; also see Graph, p. 45

5 pupils' ranks varied extremely from the average, compared with the Mathematics teacher's ratings.(Column 5, Math.;also see Graph,p 46)

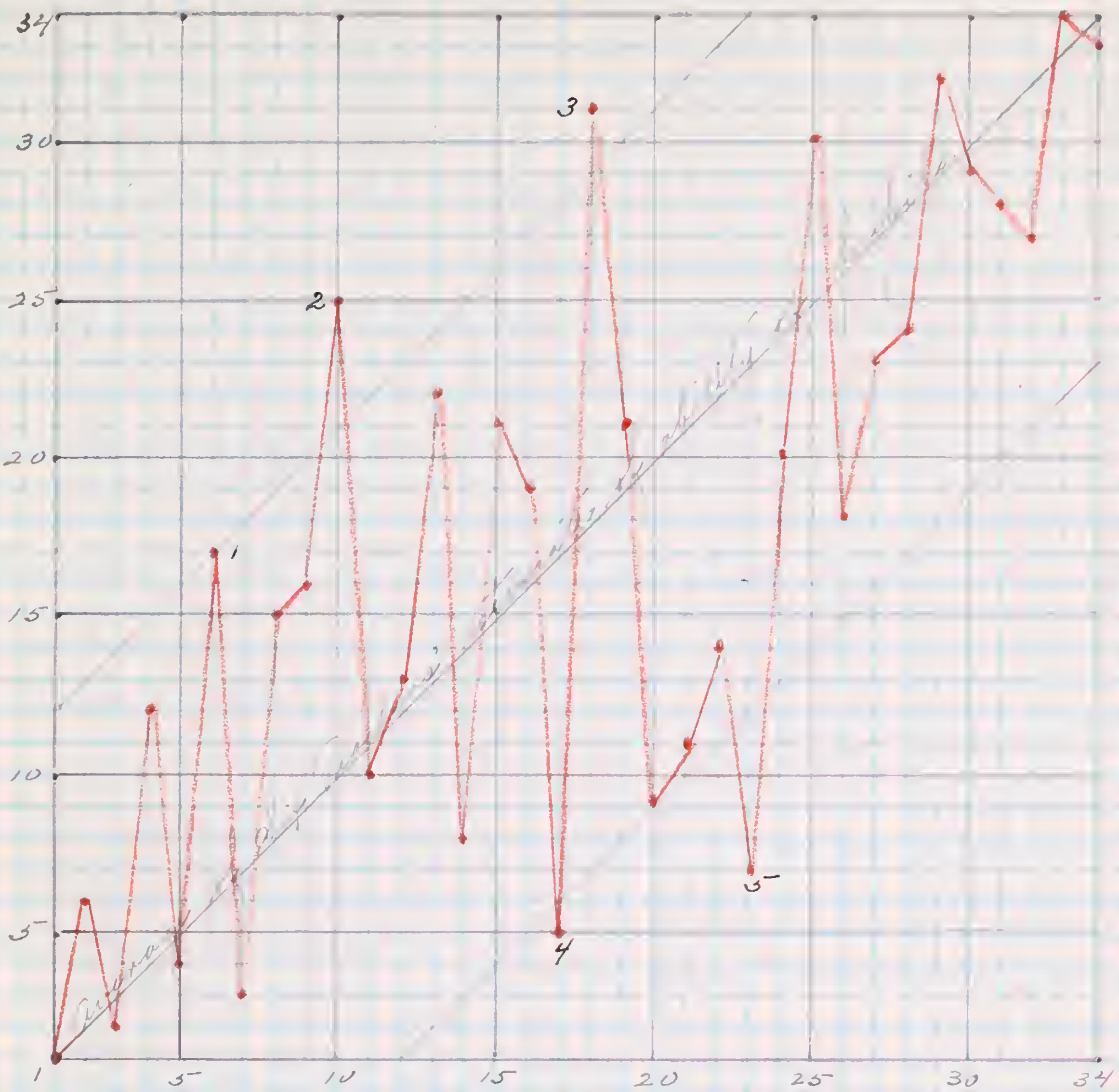
2 pupils' ranks varied extremely from the average, compared with the Geography teacher's ratings. (Column 6, Geog.; also see Graph, p 47)

Science Class # 2



No extreme variants

English - Class 8 2

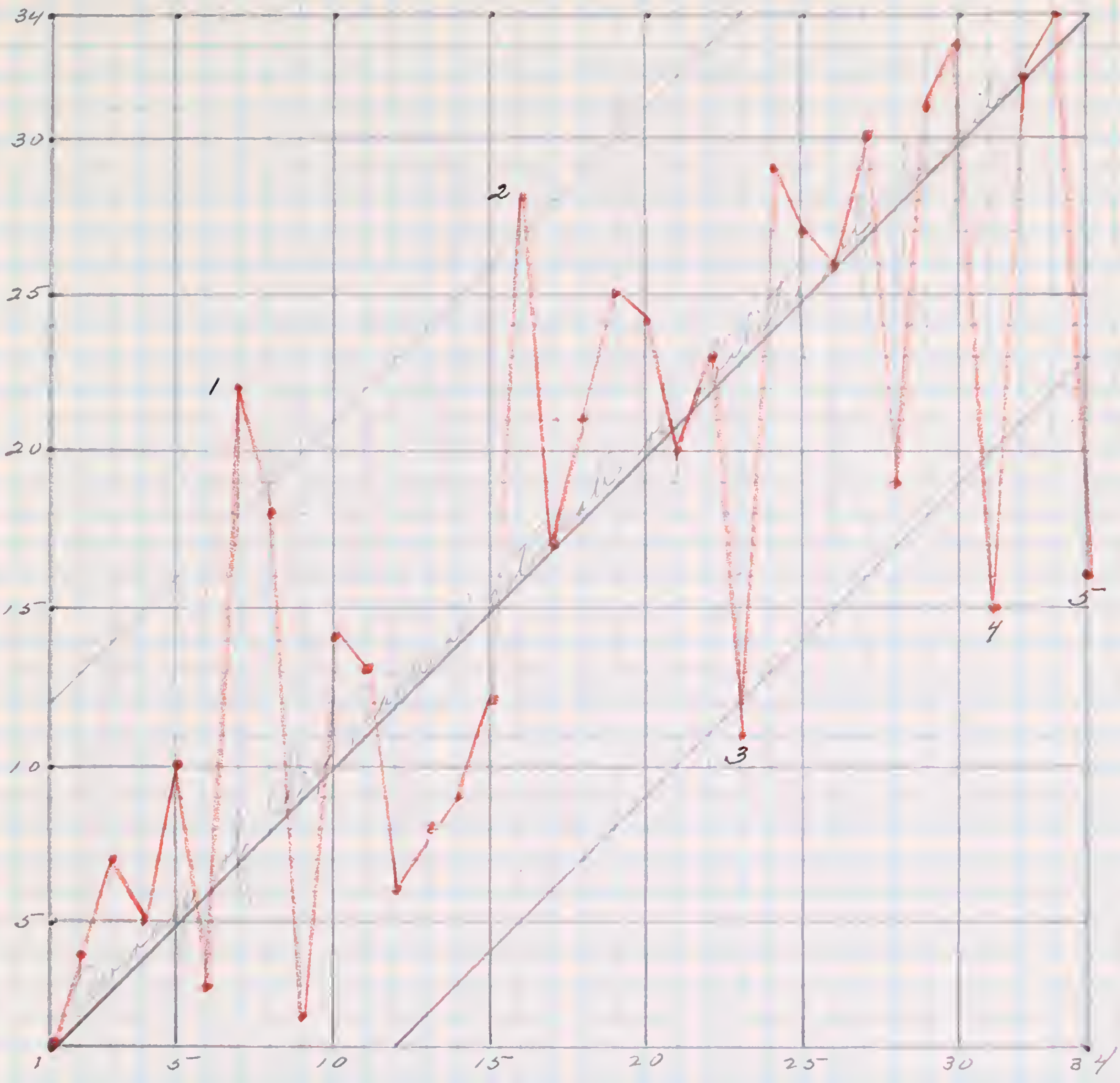


5 Extreme variants

1 Francis [illegible]
2 [illegible]
3 [illegible]
4 Charlotte [illegible]
5 Margaret [illegible]

C. S. A.
teacher's rating

History. (Class 8 a)



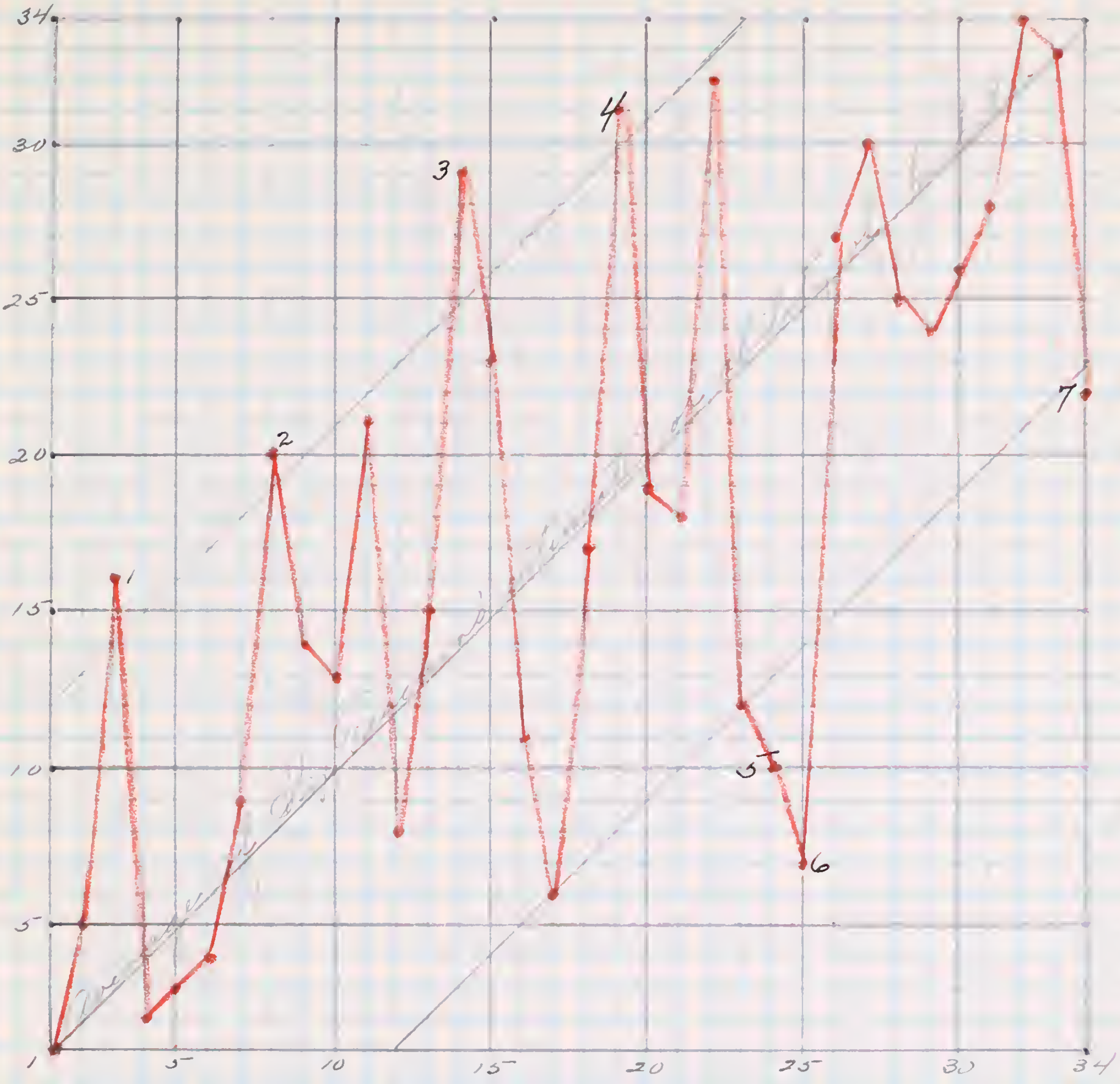
5 Extreme variants

1 Frances Hansen
2 Anita Campbell
3 [illegible] Rogers
4 Helen Bolin
5 Edward Travis

C. M. S.

Teachers rating

Spanish Class 8-B

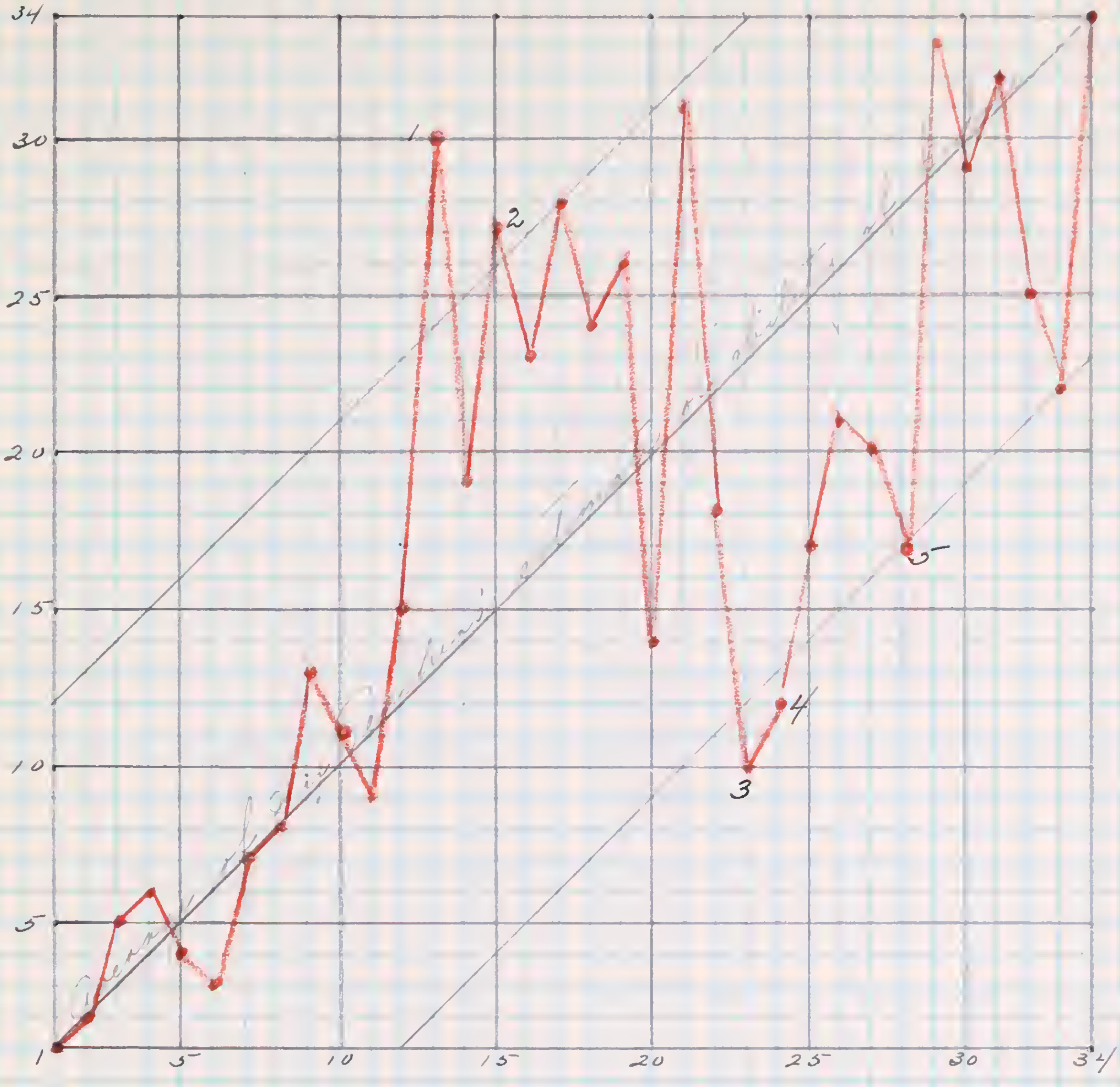


7 Extreme variants

1 Edward Lewis
2 Helen Pigat
3 Alfred [illegible]
4 Eugene Foley
5 Madeline Brown
6 Margaret [illegible]
7 Bernice Mason

[illegible]
teachers rating

Mathematics - Class F-3)

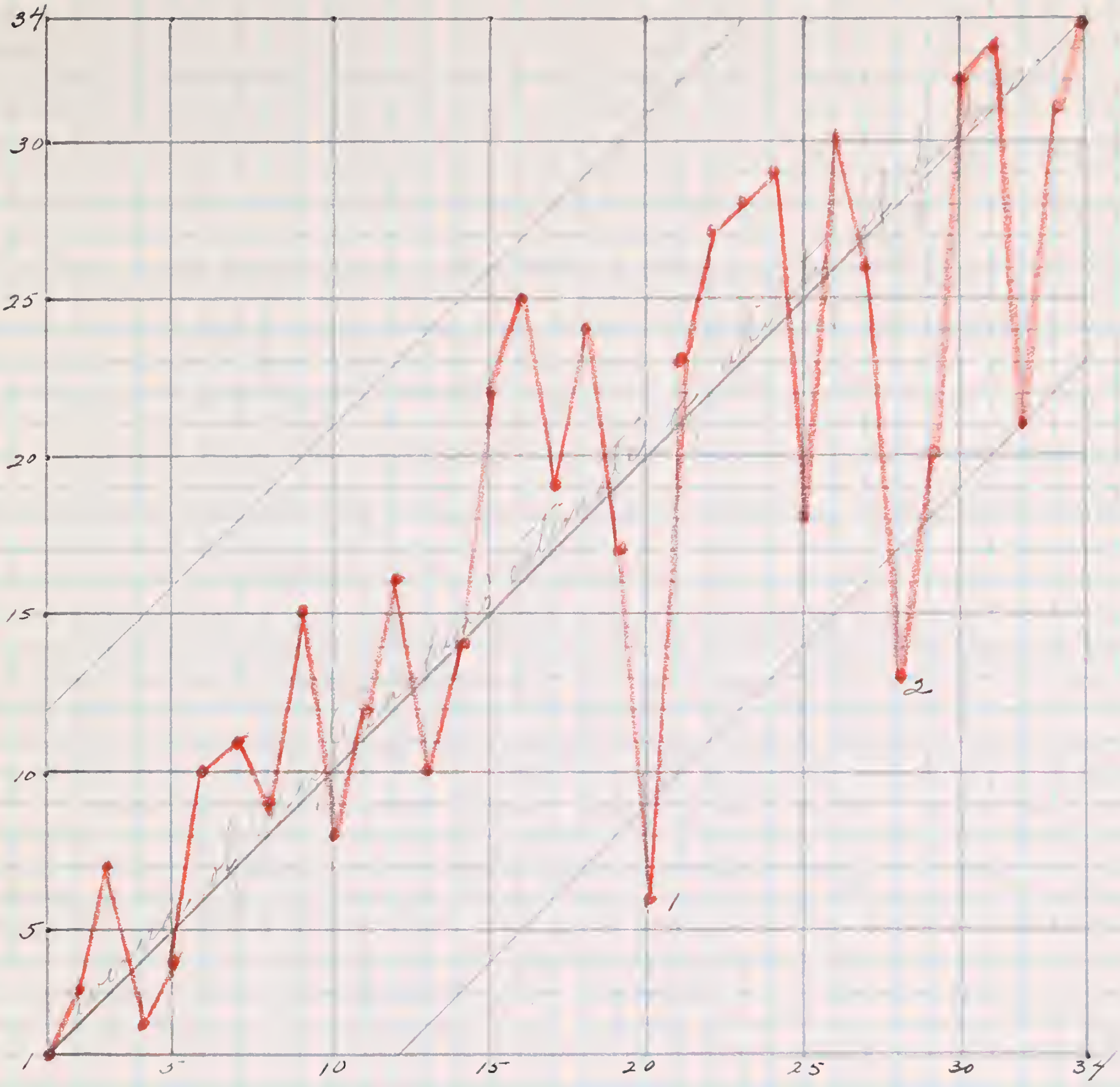


5 Extreme variants

1 Margaret Mc[illegible]
2 Mary [illegible]
3 [illegible]
4 [illegible]
5 [illegible]

E. H. D.
Teachers rating

Geography (Class [illegible])



2 Extreme variants

1 Beatrice Sullivan

2 Veronica Clett

Teacher's rating

In the "Table of Extreme Variations Based on the Average of Six Teachers' Estimates of Pupils' Rank Compared with Each Teacher's Individual Estimate of Pupils' Ranks" (p .41) there are listed the eighteen children concerning whom the teachers disagreed. A study of this table will show that only in the case of Edward Davis are more than two teachers in agreement as to the pupils that should be considered extreme, and that out of the 18 extreme cases, 13 pupils are named only once.

One of the most interesting developments connected with the study of the ratings by the six teachers of this class was the difference in rank assigned to each pupil.

Numbering the pupils from 1 to 34 in alphabetical order and comparing ranks, there were found to be marked contrasts in teachers' estimates. In the following analysis the first column indicates the pupil's number, the second column the highest rank given the pupil by a teacher, the third column the lowest rank given, and the fourth column the variation between the extremes.

No. of Pupil	Highest Rank	Lowest Rank	Variation
1	4	24	20
2	29	34	5
3	3	34	31
4	10	33	23
5	7	20	13
6	22	32	10
7	11	32	21
8	6	25	19
9	8	14	6
10	4	23	19
11	14	30	16
12	30	34	4
13	9	22	13
14	2	17	15
15	16	31	15
17	2	9	7
18	15	27	12
19	15	32	17
20	8	29	21

No. of Pupil	Highest Rank	Lowest Rank	Variation
21	1	1	0
22	2	7	5
23	5	24	19
24	3	25	22
25	18	33	15
26	14	28	14
27	17	29	12
28	7	34	27
29	13	34	21
30	8	26	18
31	9	28	19
32	8	31	23
33	2	20	18
34	19	30	11

If this class should be divided into thirds according to rank, 14 pupils would be put into the first third of the class by some teachers and into the last third by other teachers.

Three would be definitely placed in the lowest third by all the teachers, and four in the highest third of the class. Of the remaining 13, four would be placed by some teachers in the first third and by others in the middle third of the class; and nine would be placed in the middle third by some and in the lowest third of the class by others.

This analysis of a selected group of pupils showed the teachers that the rating of a pupil in any one subject had no great significance and that when six or more ratings were given by as many teachers, it would still be impossible to estimate with any great degree of accuracy his relative position in the group.

It is rather difficult to state with any degree of certainty just what effect a series of studies like the foregoing would have upon a group of teachers. Certainly the study of the differences in the chronological and mental ages of the pupils in the school district should convince all of the teachers that these variations in age limits within a grade are much greater than they suspect and should make them realize more fully than before the careful consideration that must be given to all age differentiations in order to deal justly with pupils.

The systematic development of these simple studies beginning with the age differentiations of a whole district and ending with a comparison of abilities in a group of selected pupils should bring forcibly to the attention of many teachers the fact that often they misinterpret lack of ability in one line as general disability and consider special talentalong some line as a sign of general intelligence.

The investigations of special cases, whether in the field of over-ageness or in poor class rankings, frequently reveal the teachers' ignorance of the causes of the children's slowness or failures and lead to a more careful consideration of the life history, home conditions, and out-of-school environment of their pupils.

The tremendous variations that teachers find in their own estimates of pupils' abilities, when not subjected to some control like the intelligence tests, would seem a convincing proof that too much dependence or emphasis should not be put upon marks or set standards as laid down in courses of studies, or that exist in the minds of the teachers themselves.

This study, while admittedly not complete, seems to indicate the possibility of working with teachers individually and in groups on such problems as have been briefly described and of convincing them of the desirability of making such investigations.

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